

REMARKS

Claims 1-7 and 9-13 are pending in this application.

Applicants have amended claims 1, 9 and 11, and have canceled claims 8 and 14-29.

These changes do not introduce any new matter.

In light of Applicants' election of claims 1-13 for prosecution on the merits, Applicants have canceled non-elected claims 14-29. Applicants reserve the right to pursue non-elected claims 14-29 in a timely filed divisional application.

Applicants respectfully request reconsideration of the rejection of claims 1-6, 12, and 13 under 35 U.S.C. § 102(b) as being anticipated by *Brofman et al.* (U.S. Patent No. 5,968,670). Applicants have amended independent claim 1 to specify that the encapsulant is comprised of a thermoplastic. The *Brofman et al.* reference shows the use of an expandable solder bumps means, which includes solder having a compressed cylindrical spring encased therein. Thus, the *Brofman et al.* reference does not disclose an elongator that includes an expander encapsulated in a thermoplastic as specified in amended claim 1.

Accordingly, for at least the foregoing reason, independent claim 1, as amended herein, is patentable under 35 U.S.C. § 102(b) over *Brofman et al.* Claims 2-6, 12, and 13, each of which depends directly or indirectly from claim 1, are likewise patentable under 35 U.S.C. § 102(b) over *Brofman et al.* for at least the same reason set forth above regarding claim 1.

Applicants respectfully request reconsideration of the rejection of claims 7-11 under 35 U.S.C. § 103(a) as being unpatentable over *Brofman et al.* in view of *Evans et al.* (U.S. Patent No. 5,632,434) (as noted above, Applicants have canceled claim 8 herein). Each of claims 7 and 9-11 depends directly or indirectly from independent claim 1. As will be explained in more detail below, the combination of *Brofman et al.* in view of *Evans et al.*

does not raise a *prima facie* case of obviousness against the subject matter defined in independent claim 1, as amended herein.

As discussed above in connection with the anticipation rejection of claim 1, the *Brofman et al.* reference shows the use of an expandable solder bumps means, which includes solder having a compressed cylindrical spring encased therein. According to the Examiner, the *Evans et al.* reference “teaches the interchangeability of solder and polyamide.” Office Action at page 3. In support of the obviousness rejection, the Examiner alleges that it would have been obvious to one having ordinary skill in the art to replace the solder used by *Brofman et al.* with a polyamide to ensure a strong joint in view of the teachings of *Evans et al.*

Applicants respectfully traverse the Examiner’s characterization of the *Evans et al.* reference as teaching that solder and polyamide are interchangeable for purposes of the claimed subject matter. The pertinent portion of the *Evans et al.* reference relied upon by the Examiner states as follows: “Attachment of chips to substrates on multichip modules and hybrid packages is generally accomplished with adhesives (epoxies, polyimides), hard solders (AuSi, AuSn), or flip-chip solder bumps (PbSn). Hard solders offer considerable thermal, mechanical, and electrical advantages over adhesives and flip-chip processes.” *Evans et al.* at column 1, lines 39-44.

As would have been recognized by those skilled in the art at the time of the invention, the quoted portion of the *Evans et al.* reference merely summarizes the materials that are used in different bonding applications. In wire-bond packaging applications, such as shown by *Evans et al.*, the back of the chip is bonded to the substrate and the bonding does not form any electrical interconnection between the chip and the substrate. In such wire-bond packaging applications, an epoxy material is typically used for low power applications and solder is typically used for high power applications. In flip-chip applications, such as shown in

Brofman et al. and the subject application, the active circuit on the chip is mechanically and electrically interconnected to the substrate through solder joints.

Applicants respectfully submit that nothing in the *Evans et al.* reference would have provided one having ordinary skill in the art with a motive to modify the expandable solder bumps means shown in *Brofman et al.* include a polyamide instead of solder. As noted above, the *Evans et al.* reference relates to wire-bond packaging applications, which have different material requirements than flip-chip applications such as shown in the *Brofman et al.* reference. Thus, the portion of the *Evans et al.* reference relied upon by the Examiner would not have motivated one having ordinary skill in the art to use either an adhesive or a hard solder in a flip-chip application. Moreover, even if the quoted portion of *Evans et al.* would have provided one skilled in the art with a motivation to modify the *Brofman et al.* reference, any such motivation would have been to use a hard solder because *Evans et al.* teaches that “[h]ard solders offer considerable thermal, mechanical, and electrical advantages over adhesives and flip-chip processes.” *Evans et al.* at column 1, lines 42-44.

For at least the foregoing reasons, Applicants respectfully submit that the *Evans et al.* reference does not support the Examiner’s allegation that this reference teaches that solder and polyamide are interchangeable for purposes of the claimed subject matter. Thus, the *Evans et al.* reference would not have provided the requisite motivation to modify the *Brofman et al.* reference in the manner proposed by the Examiner. In the absence of the requisite suggestion or motivation to combine the references, the combination of *Brofman et al.* in view of *Evans et al.* is improper and does not raise a *prima facie* case of obviousness against the subject matter defined in independent claim 1, as amended herein.

Accordingly, independent claim 1, as amended herein, is patentable under 35 U.S.C. § 103(a) over the combination of *Brofman et al.* in view of *Evans et al.* Claims 7 and 9-11, each of which depends directly or indirectly from claim 1, are likewise patentable under 35

U.S.C. § 103(a) over the combination of *Brofman et al.* in view of *Evans et al.* for at least the same reasons set forth above regarding claim 1.

In view of the foregoing, Applicants respectfully request reconsideration and reexamination of claims 1-7 and 9-13, as amended herein, and submit that these claims are in condition for allowance. Accordingly, a notice of allowance is respectfully requested. In the event a telephone conversation would expedite the prosecution of this application, the Examiner may reach the undersigned at (408) 749-6902. If any additional fees are due in connection with the filing of this paper, then the Commissioner is authorized to charge such fees to Deposit Account No. 50-0805 (Order No. AGSGP010).

Respectfully submitted,
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